

The Arachnida are remarkable for their numerical strength, their habits, and the size to which some of them attain. *Epeira fasciata*, Walckenaer, appears to be the only Europæan species inhabiting Chusan.

With regard to the Entomology of Chusan (a collection of insects having been despatched to the Museum of the Hon. the Court of Directors, and a duplicate series by order of Government to the Entomological Society of London), it must suffice to state, that Indian forms prevail and Europæan forms are not numerous. Many identical species occurred in the extensive collections formed in the Khasyah Hills and Assam* in 1835–36, by Messrs. McClelland and Griffith. Among the forms characteristic of Chusan were a species of *Tingis*, a *Centrotus*, and a brilliant golden green *Agrion* with black wings.

[To be continued.]

XXXII.—Notice of the Genus Murchisonia.

By M. D'ARCHIAC†.

ON taking a survey of the numerous genera of the Gastropodous Mollusca, we find in many cases, especially in the fossil genera, shells possessing the peculiar character of a more or less deep sinus or notch on the right lip. Thus, amongst the *Naticæ* we find *Natica cineta* (Phill. Geol. of Yorksh., pt. 1. pl. 4. fig. 9), and perhaps *Buccinum vittatum* (Phill. Geol. of Yorksh., pt. 2. pl. 16. fig. 14), as well as several other shells of pl. 15 of the latter work. Between *Solarium* and *Euomphalus* we find the genus *Schizostoma* of Bronn, and certain shells not yet classed from the lower oolite of Calvados and the carboniferous limestone of Belgium. The latter certainly do not present a proper notch on the last whorl, but a certain number of holes, which close as the shell advances in age, nearly in the same manner as in *Haliotis*. Between *Trochus* and *Turbo* we find *Pleurotomaria* and *Seisurella*; between *Cerithium* and *Fusus* the great genus *Pleurotoma*. Lastly, *Nerineæ*, the situation of which does not

* The richness and interest of the fauna and flora of the province of Assam, which from its position is of our Indian dominions the one most calculated to throw light upon the south-western part of China Proper (Yunnan), may be inferred from the reports and collections of the two above-named naturalists: Mr. Griffith has added further to our knowledge by the botanical and zoological collections which he has continued forming by native collectors, trained and privately maintained by himself, in the Khasyah Hills.

† From the Bulletin of the French Geological Society, vol. xii. 1841.—We are indebted for the translation to Thomas Johnson, Esq., of Hexham.

appear to be yet determined, also presents as an important character the notch on the right lip.

We have thus many shells which, though similarly provided with a sinus, differ much in other respects; for instance, between the genera *Schizostoma* and *Pleurotoma* there is a distance similar to that which separates *Fusus* from *Euomphalus* or *Solarium*, and there is as much reason for uniting the former as the latter. We are aware, that to arrive at correct classification a combination of all the characters is necessary, and that the attention must not be confined to one alone; it does not however appear that Count Munster has observed this rule, for in his last work he gives the generic name *Schizostoma* to many species not only widely differing from those on which the genus was founded, but also varying considerably from each other*.

The shells which M. Verneuil and myself propose to unite under the name of *Murchisonia* are widely distributed in the formations beneath the coal series; but we are not as yet acquainted with any above these formations†. Goldfuss at first regarded many of them as *Melaniæ*, and afterwards as *Turritellæ*; Phillips and Hisinger have adopted the latter name for other species; Count Munster placed some of them in the genus *Schizostoma*; Murchison included two in *Pleurotoma* and one in *Pleurotomaria*; Von Buch, when describing *Turritella cingulata* (Hisinger), classes it as a *Pleurotomaria*; lastly, Beck is inclined to refer the *Turritellæ* of Goldfuss to the *Cerithinæ*. We shall now endeavour to show whether this difference of opinion does not sufficiently prove that these shells, which we place between *Cerithium* and *Turritella*, do not constitute a distinct group with sufficiently marked characters to form a genus, or at least a subgenus, in a systematic classification.

* The genus *Pleurotomaria* appears, on the whole, to be ill defined, for we find placed in it indifferently turbinated shells provided with a columella and a small umbilicus with a quadrangular aperture, like *Trochus*, or rounded, as in *Turbo*, and others which are discoidal, without a columella, having the umbilicus sufficiently open to allow the whorls of the spire to be seen, and an opening, which, joined to their other characters, gives them the appearance of *Solarium*. We think with Bronn, that all species presenting the latter characters ought to be placed in the genus *Schizostoma*, as they differ as much from the others as *Solarium* does from *Trochus* or *Turbo*.

† If we had not personally procured well-preserved specimens of *Turritella concava*, Sow. tab. 565, in the quarry at Chilmark (Wiltshire), the figure given by this author would lead us to believe that this shell might belong to the genus *Murchisonia*; but we are satisfied that the lines of growth do not undergo any inflection or interruption, and that they proceed from behind to the anterior part of the suture at the base of each whorl.

In fact, the *Murchisonia* cannot be confounded with the *Schizostomæ*, as the latter are depressed, planorbular, with a very wide umbilicus, and without a columella; they are, in fact, true *Euomphali* with a NOTCHED APERTURE. The characters of the aperture of *Melania* equally oppose the introduction of *Murchisonia* into that genus; and it differs from *Pleurotomaria* by its turritid and more elongated form, as well as in the aperture, which authors do not appear to have sufficiently noticed hitherto. The absence of a true canal, and the slight elongation of the columella, which is curved, equally oppose its introduction amongst the *Pleurotomæ*. The *facies* of *Murchisonia* distinguishes it at the first glance from *Turritella*. The disproportion of the successive whorls in some varieties, and the irregularities observable in the growth of others, are doubtless empirical characters, but exceedingly common in *Murchisonia* and *Cerithium*, whilst they are rare in *Turritella*, which is perfectly regular throughout the whole length of the spire. The external ornaments of *Murchisonia* are also more like those in *Cerithium* than *Turritella*. Lastly, the examination of the mouth, the most important character of all, removes *Murchisonia* still further from the latter genus. Instead of being rounded, as in *Turritella*, it is oblong and twice as long as wide, terminating at the lower angle in a very small canal, and sometimes presenting a groove at the upper angle. The columella, which is slightly curved, is reflected in the form of an S, and the right lip has a deep narrow notch with parallel edges.

During the life of the animal the continuous closing of this notch has produced an elevated keel or carina, which is simple or double, or rather a flattened fillet bordered by two more or less elevated regular bands, approximating so nearly in some species that they appear to unite, were it not for a fine stria which enables one to distinguish them*. The

* The notch in *Murchisonia* and *Pleurotomaria* is not closed in the same manner as the sinus in *Pleurotoma* and some of the *Cerithinæ*. In the former, the process of closing is in some measure independent of the growth of the rest of the aperture. The striæ are interrupted at the fillet or keel, and those we observe on this part do not correspond with the inflected striæ above and beneath them. On the contrary, in *Pleurotoma* the sinus and the aperture are closed by a continuous calcareous plate or lamina, and the striæ, though more or less inflected, are always uninterrupted; in *Pleurotomaria* and *Murchisonia*, the trace of the notch corresponding to that part of the mantle of the animal, which, instead of a simple rounded hollow, would present a deep narrow notch with parallel edges, is always distinctly defined by two bands or striæ, nothing similar to which appears in *Pleurotoma* or *Cerithium*.

In variety *c.* of *Murchisonia bilineata*, nob., in *Pleurotomaria limbata*, Phill., and *P. Defrancii*, nob., as well as in *Schizostoma radiata*, nob., it

striae of growth on leaving the suture of the whorls are arched anteriorly, and then take a backward direction as far as the keel or fillet. On these they form a curve convex posteriorly, and beyond the striae take a forward direction, again curving as they approach the base of the aperture. It is chiefly the constancy, and especially the perfect regularity of the fillet or keel, throughout the whole length of the spire, which has determined us to separate these shells from *Cerithium*; for in the latter genus we find species such as *Cerithium lineola*, *echinoïdes*, *involutum*, *Cordieri*, *acutum*, *variabile*, *turris*, &c., having a sinus on the right lip, which is always indicated on the whorls by the inflections of the striae of growth. The slight curvature of the columella and the shortness of the canal, in most species from the secondary formations, appear to point out the affinity of *Murchisonia* rather to the *Potamides* than the true *Cerithinae*. The *Potamides* do not appear to us to be more exclusively fluviatile than the *Cerithinae* themselves to be exclusively tertiary or recent. We may lastly remark, that the *Murchisoniae* represent the *Cerithinae* and *Turritellae* in the ancient formations, as the fossil *Pleurotomariae* represent the existing *Trochi*.

The following is our definition of the genus *Murchisonia*:

Shell turrited; aperture oblong, oblique, terminated at the base by a very short or truncated canal. Columella curved, slightly recurved outwardly. A notch, more or less deep, on the right lip, narrow, the edges parallel, the successive closing of which produces on the middle of the whorls a simple or double keel, or rather a continuous fillet or band, well defined throughout the whole length of the spire.

seems probable that the mantle of the animal was also deeply notched; but from the two lips or edges of the notch being in contact, instead of a greater or less fillet or keel, there are two calcareous plates superimposed, and the striae of growth, which on each of them diverge in opposite directions, indicate that they are formed by two separate portions of the mantle. In confirmation of our view of the manner in which the closing of the notch takes place in these three genera, we generally find that the wider the fillet the less salient it is. In fact, it is obvious that the two lips of the notch in the mantle being wide asunder, they cannot form either a fillet or keel; the notch would then only be closed at its posterior extremity, independently of the two portions of the mantle, which would secrete above and beneath the right lip of the aperture. On the contrary, when they approach and secrete calcareous matter at the point of contact, the two lips of the notch would form a keel, elevated and marked in proportion as their contact was more intimate. In certain shells, as in *Schizostoma radiata*, the plates thus produced are completely united. The importance, as a specific character, of the greater or less width or elevation of the fillet or keel does not appear to us to be considerable; and we shall show elsewhere that the proportions of the notch are very variable in the same species.

The species composing the genus *Murchisonia*, such as we have here restricted it, are, as far as we know at present, the following:—

1. *Murchisonia spinosa*, nob. (*Turritella spinosa*, Gold., Museum of Bonn; *Buccinum spinosum*, Sow., pl. 566, fig. 4; *Cerith. antiquum*, Stein., Mém. de la Soc. Géol. de France, t. i. p. 367.)
2. ————— *intermedia*, nob.
————— id. var. *a*.
3. ————— *bilineata* (*Turritella bilineata, melania*, id. Gold.).
4. ————— *excavata*.
————— id. var. *a*.

All these shells are widely distributed in the limestone of Pfaffrath, Hagen, Iserlohn, Vilmar, Sötenich, &c. *M. spinosa* is found in Devonshire, in deposits of the same age. *M. excavata* is likewise found in the carboniferous limestone of Visé (Belgium), and the rest in the limestone of Néhou and Izé, near Vitré, in the departments of Manche and Ile-et-Vilaine.

5. *Murchisonia bigranulosa*, nob., Pfaffrath.
————— id. var. (*Turritella abbreviata*, Sow., pl. 565, fig. 2), Pfaffrath, Devonshire.
6. ————— *binodosa*, nob., Lustheide*.
7. ————— *cingulata*, nob. (*Turritella cingulata*, Hisin. pl. 12, fig. 6), Sweden.
8. ————— *articulata*, nob. (*Pleurotoma*, id., Murch. Sil. Syst. pl. 5, fig. 25), Ludlow Rock.
9. ————— *Corallii*, nob. (*Pleurotoma*, id., Murch. ib. pl. 5, fig. 26), ib.
10. ————— *Lloydii*, nob. (*Pleurotomaria*, id., Murch. ib. pl. 8, fig. 14), ib.
11. ————— *teniata*, nob. (*Turritella*, id., Phill. Geol. of Yorksh., pt. 2, pl. 16, fig. 7), Bolland (mountain limestone), Gronau.
12. ————— *tricincta*, nob. (*Schizostoma*, id., Munst., pl. 15, fig. 14), Elbersreuth.
————— id. var. *a*, nob., Vilmar.
————— id. var. *b*, Bas-Boulonnois.
13. ————— *fusiformis*, nob. (*Pleurotomaria*, id., Phill., pl. 15, fig. 16.)

* These different species will be described and figured in a 'Memoir on the Fossils of the ancient formations of the neighbourhood of the Rhine,' on which M. Verneuil and myself are engaged at present, and which will appear in the next volume of the Transactions of the Geological Society of London.